

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IB 03/04173

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 H01F6/04 F25D29/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 H01F F25D F17C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

PAJ, EPO-Internal, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 544 943 A (OSAKA GAS CO LTD) 9 June 1993 (1993-06-09) the whole document ---	1-6,8-11
Y	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 13, 5 February 2001 (2001-02-05) -& JP 2000 274852 A (SUMITOMO HEAVY IND LTD), 6 October 2000 (2000-10-06) abstract; figures 1,6 ---	7,12,13
Y	US 5 410 286 A (HERD KENNETH G ET AL) 25 April 1995 (1995-04-25) cited in the application abstract ---	7,12
Y	US 5 410 286 A (HERD KENNETH G ET AL) 25 April 1995 (1995-04-25) cited in the application abstract ---	13
		-/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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Date of the actual completion of the International search

Date of mailing of the International search report

12 January 2004

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 14 26 986 A (MAX PLANCK GESELLSCHAFT) 29 May 1969 (1969-05-29) page 6, line 1 -page 7, line 19; figure 1 ---	6
A	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 02, 29 February 2000 (2000-02-29) -& JP 11 325630 A (ISHIKAWAJIMA HARIMA HEAVY IND CO LTD), 26 November 1999 (1999-11-26) abstract; figures 1,2 ---	7.12
A	PATENT ABSTRACTS OF JAPAN vol. 1996, no. 10, 31 October 1996 (1996-10-31) -& JP 08 159584 A (NIPPON SANSO KK), 21 June 1996 (1996-06-21) abstract ---	
A	US 4 332 136 A (QUACK HANS) 1 June 1982 (1982-06-01) ---	
A	EP 0 937 995 A (GEN ELECTRIC) 25 August 1999 (1999-08-25) ---	
A	US 4 872 314 A (ASANO KATUHIKO ET AL) 10 October 1989 (1989-10-10) ---	
A	US 2001/023592 A1 (NAGATA ATSUSHI ET AL) 27 September 2001 (2001-09-27) ---	
A	GB 971 102 A (MAX PLANCK GESELLSCHAFT) 30 September 1964 (1964-09-30) ---	
A	DE 18 14 783 A (SIEMENS AG) 2 July 1970 (1970-07-02) -----	

**INTERNATIONAL SEARCH REPORT**

 International Application No  
 PCT/IB 03/04173

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 0544943	A	09-06-1993	CA US EP DE DE	2056691 A1 5293750 A 0544943 A1 69107213 D1 69107213 T2	30-05-1993 15-03-1994 09-06-1993 16-03-1995 24-05-1995
JP 2000274852	A	06-10-2000	JP	3375906 B2	10-02-2003
US 5410286	A	25-04-1995		NONE	
DE 1426986	A	29-05-1969	BE CH DE FR GB NL US	668022 A 443373 A 1426986 A1 1440509 A 1061910 A 6507927 A 3307370 A	01-12-1965 15-09-1967 29-05-1969 27-05-1966 15-03-1967 07-02-1966 07-03-1967
JP 11325630 2	A			NONE	
JP 08159584 2	A			NONE	
US 4332136	A	01-06-1982	CH DE FR GB JP JP JP NL	644442 A5 3017236 A1 2481428 A1 2074709 A , B 1393628 C 57000460 A 61057982 B 8003044 A	31-07-1984 12-11-1981 30-10-1981 04-11-1981 11-08-1987 05-01-1982 09-12-1986 01-12-1981
EP 0937995	A	25-08-1999	US EP JP	5936499 A 0937995 A2 11317307 A	10-08-1999 25-08-1999 16-11-1999
US 4872314	A	10-10-1989	JP JP	1149407 A 2564338 B2	12-06-1989 18-12-1996
US 2001023592	A1	27-09-2001	JP	2001227851 A	24-08-2001
GB 971102	A	30-09-1964	DE FR US	1161570 B 1314895 A 3166915 A	23-01-1964 11-01-1963 26-01-1965
DE 1814783	A	02-07-1970	DE	1814783 A1	02-07-1970